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A STUDY TO  
DEVELOP A METHODOLOGY TO INCREASE  
THE EFFECTIVENESS/EFFICIENCY  
OF PATIENT WARD/BED ASSIGNMENTS  
AT WALTER REED ARMY MEDICAL  
CENTER, WASHINGTON, D.C.

A Graduate Research Project  
Submitted to the Faculty of  
Baylor University  
In Partial Fulfillment of the  
Requirements for the Degree  
of  
Master of Health Administration  
by  
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## I. INTRODUCTION

### Background

Walter Reed Army Medical Center (WRAMC) admits approximately sixty patients per day. The Deputy Commander for Administration (DCA) states that with an average daily census of approximately 750, there is always room to admit the daily accessions. These patients, however, are often unable to be admitted to the ward on which the appropriate medical service controls beds because that ward is filled. This situation creates a hardship on the patients, the clinical staff, and the administrative staff. It is postulated that the quality of patient care suffers due to the above described situation. The current responsibility for determining which ward a patient will be admitted to rests with the chief resident of the service which controls the bed.

Without actual knowledge of the situation, one is unable to determine the exact nature of the problem. Whether the present system is functional, and whether this system may be improved upon in order to enhance the delivery of care to patients admitted (by admitting them to the correct ward or service initially), is questionable. A complicating problem is the fact that WRAMC frequently (approximately once a week) receives patients via the air evacuation system in numbers ranging from thirty five to fifty. The problem of placement becomes particularly acute when these patients are received.

Speculation on the nature of the problem leads one to consider that it may consist of a queuing element, an organizational behavior element, an administrative element, a quality assurance element (access to medical care and quality of care received on ward to which alternately assigned) as well as an institutional management element (are there enough beds allocated to certain services and, are length of stay data within expected levels).

#### Problem Statement

To develop a methodology to increase the effectiveness/efficiency of patient ward/bed assignments at WRAMC.

#### Objectives

##### 1. Organizational Behavior

###### a) Describe the following communication channels:

- 1) Chief resident to chief resident
- 2) Chief resident to nursing personnel
- 3) Chief resident to patient

###### b) Describe dynamics of interward transfer

mechanism.

##### 2. Quality Assurance

a) Identify quality assurance issues involved in redirecting an admission:

- 1) Access to medical care
- 2) Appropriateness of medical care

b) Identify issues of quality assurance at WRAMC that are affected by the current policy concerning redirection.

### 3. Institutional Management

- a) Describe present admission system including criteria for admission to an alternate location.
- b) Collect data on number of redirected patients (patients admitted to an alternate ward/service).
- c) Determine the length of time required to admit the redirected patient versus one who need not be redirected.
- d) Develop an alternative solution proposal.
- e) Develop a plan to implement the proposed solution.

#### Assumptions

For the purposes of this study it will be assumed that:

1. An improvement in effectiveness/efficiency of bed/ward assignment can result from improvements in one or more of the administrative areas considered, or any combination thereof. For example, if it is discovered that an institutional management problem (not enough beds assigned to a service) is identified, an improvement in this condition will result in increased effectiveness/efficiency.

2. The average daily census and the average daily admission rate will not alter significantly during the period of the study (significant alteration could negate the problem if occupancy rates fell below the threshold levels of conditions which require redirection).

### Limitations

This research will be constrained by the following factors:

1. The flexibility to alter bed allocations at WRAMC to correctly meet the needs of certain services may not be feasible given physical arrangement as well as administrative constraints imposed by higher authority and requirements for training programs.

2. Given a continually changing patient population as well as staff population, an alternative solution which is currently feasible may change with changes in the above population. For example, the new mission of screening and caring for the HTLV-III patient has resulted in designating additional bed space and additional staffing to fulfill that mission. An alternate designation of Walter Reed as the Training Center for a new Medical Residency program would likewise alter the potential patient population, thus requiring an alteration in bed allocation.

3. The scope of this study must be limited to exploration of one service, the Department of Medicine. Whether the Department of Medicine is representative of the total population is questionable and cannot be assumed. However, time constraints necessitate a limitation and prior observations of the author while assigned to other military treatment facilities indicate that this service may be representative.



### Methodology

This section provides the details of how the objectives of the study were accomplished. Each objective of the study is addressed in sequential order and intermediate tasks to accomplish the objective are outlined.

Definition: Redirection--the assignment of a patient to a ward or unit due to nonavailability of space on the unit where the appropriate medical service controls beds or, a significant delay in admission (greater than one hour).

#### Objective 1: Organizational Behavior Issues

Analysis of communication channels. A description of how one chief resident contacts the next to obtain permission to admit his patient to the alternate ward/service was obtained. Following this an attempt was made to describe how, when, and by what method this information is passed from the chief resident to nursing personnel, and to the patient. A standardized interview process was developed by the author in order to quantify and describe these communications (Appendix A, Tab C).

Analysis of interward transfer mechanism. A detailed algorithm of the current transfer mechanism was developed and decision alternatives were identified (Appendix B).

#### Objective 2: Quality Assurance Issues

Identify quality assurance issues involved in admitting a patient to an alternate ward/service. An extensive review was made of the literature to describe the quality assurance issues;

quality of care, appropriateness of care, delay in initiation of care, and the structure of health care delivery service.

Identify issues of quality assurance that affect WRAMC.

A comparison of observed behavior in the WRAMC redirection mechanism to those discussed in the literature was conducted.

Objective 3: Institutional Management Issues

Describe present admission system including criteria for admission to an alternate location. A complete catalogue of regulations, standard operating procedures and policies concerning admission of a patient to WRAMC was compiled.

Collect data on number of redirected patients. Admission data (utilizing admission and disposition records) for fiscal year 1985 were reviewed to determine trends, patterns, and extent of the condition of redirection. Data was arranged to determine the percent of redirection overall as well as a percent by service studied. Scatter diagrams were developed to graphically represent findings. Comparisons between quarterly figures were accomplished (percentage to percentage) in an attempt to detect seasonal or other cyclic patterns.

Determine the length of time required to admit the redirected patient versus one who need not be redirected. A limited time and motion observation was performed to determine the extent of the difference in time required to admit a redirected patient versus the time required to admit a patient not needing redirection.

Develop an alternative solution proposal. A proposal for a recommended solution to the current redirection problem was developed. This proposal is presented as Appendix A in the form of a decision paper as recommended by the Health Services Command Memo 340-3, Office Management Correspondence Procedures.<sup>1</sup>

Develop a plan to implement the proposed solution. A detailed algorithm for the admission process at WRAMC was developed with a specific proposal for the administrative decision processes recommended to be followed to prevent redirection (Appendix C).

#### Extension of the Scope of the Study

The original scope of this study was limited by the author. Further examination of the situation surrounding this problem, however, led to the consideration of additional services/departments. It is felt that this further consideration gives a more complete understanding of the problem as it affects Walter Reed Army Medical Center, and that the additional time spent in this consideration was justified.

#### Endnotes

<sup>1</sup>Health Services Command, Memo 340-3. Office Management Correspondence Procedures (25 June 1985).

## II. DISCUSSION

### Organizational Behavior Issues.

#### Analysis of Communication Channels

After discussing the redirection problem with chief residents, the Admissions Department officer, and admitting clerks, there is a general consensus that a redirection problem does exist at this institution and that the Department of Medicine is the service which is most frequently affected. The second most frequently affected service is the Department of Pediatrics. The Department of Medicine and the Department of Pediatrics are frequently forced to temporarily or permanently admit patients to wards where an alternate service controls beds. In the case of pediatrics, care of the patient is relinquished to the alternate service, for example, orthopedics or general surgery. The Department of Medicine, however, retains responsibility for directing care of patients admitted to alternate wards. This practice causes inconvenience to the patient, the physician and to the nursing staff.

Using a standard interview format (Appendix A, Tab C), twelve senior residents were interviewed: four from the General Surgery Service, three from the General Pediatric Service, and five from the General Medicine Service. Although physicians from the General Surgery Service rarely admit patients to wards where the Department of Surgery does not control beds, there is one

surgical subspecialty (Vascular Surgery) mentioned by each senior resident as being chronically short of bed space, requiring frequent borrowing of beds from other surgery services or subspecialties, or other departments.

In response to the first question regarding the mechanism by which a bed may be borrowed, general surgery residents call senior residents of surgical subspecialties to borrow a bed, usually by informally asking a friend first. If no bed is available, surgery residents choose to delay admission or refer the patient to another medical treatment facility. One surgeon stated that he would not admit patients to a ward where an alternate department controls beds due to quality assurance considerations. He went on to say that nurses on medical nursing units were unfamiliar with caring for the surgical patient and that he feared that certain observations deemed necessary to the patient would be overlooked.

In response to question two, physicians from the General Surgery Service stated that when bed space was available, they allowed patients from alternate services/departments to be admitted to the beds they controlled. It was stated that these arrangements were always made between the senior residents of the services/departments involved.

The third question, concerning which service retains responsibility for the care of the patient was usually answered: the admitting service (Pediatric Service being the exception).

Likewise, there was a consensus that the patient would return to a bed controlled by surgery immediately upon availability of that bed (question four). Only one physician felt the the patient would remain on an alternate ward for an indefinite period of time.

While all physicians interviewed agreed that the admitting physician was responsible for informing the nursing staff of a admission to an alternate service/department (question five), there was disagreement as to whether the notification would be done in person or telephonically (question six). A similar disparity existed in response to questions six and seven. All physicians interviewed agreed that it is the admitting physician who was responsible for informing the patient, but some stated that the patient would be informed in person, some stated that this would be accomplished by telephone.

Physicians from the General Surgery Service estimated that from less than one percent, to ten percent, of surgical patients were involved in problems surrounding redirection. Estimates for Vascular Surgery patients involved, however, ranged from twenty, to fifty percent.

The redirection situation surrounding the pediatric patient has definite quality assurance implications; especially when considering appropriateness of care. Extreme variations in normal physiology as well as variable psycho-social needs, and need for special physical environment, make admission of the

pediatric patient to an alternate service an extremely controversial issue. In this institution, all infants less than six months of age and pediatric medicine patients are cared for by the General Pediatric Service. Children older than six months, having disease entities other than those considered medical, are (or may be) cared for by whatever service/department is appropriate considering the presenting medical condition (general surgery, for example, may care for a pediatric patient requiring a hernia repair). The decision to place a pediatric patient on an adult unit is made only after much consultation and coordination between physicians, nurses and administrative staff.

In response to the interview questions, physicians from the General Pediatric Service all stated that the chief resident of an alternate service/department would be contacted to obtain a bed for a pediatric patient requiring admission. They also agree that the chief resident of the General Pediatric Service would be contacted for bed space on the pediatric ward. There is additional agreement that the admitting service would retain responsibility for care of the patient unless age criteria required General Pediatric Service intervention.

In the case where a pediatric patient is admitted to a bed on an alternate service/department, there is agreement that this patient would remain in that bed indefinitely. In this case the admitting physician or the chief resident of pediatrics is responsible for informing the nursing staff. This may be accomplished in person or by telephone. The patient or the

patient's family is notified by the chief resident of pediatrics, the chief resident of the alternate service/department, or by the admitting physician. This notification is either made in person or by telephone.

Pediatricians interviewed estimate that ten to forty percent of pediatric patients are involved in redirection problems. The necessity to accept air evacuation patients is the reason most frequently cited for this disruption.

Physicians from the General Medicine Service have a frequent need to seek beds for patient on wards where alternate services/departments control beds. The bed control situation on medical units is so acute that one senior resident performs a bed control function full time. He or she literally decides the placement of each patient admitted to the General Medical Service. This senior resident, called "the Bed Boy", retains this responsibility for a one month period during the senior residency year. It was pointed out that during this period, physicians serving in this capacity also follow their outpatients in the Medical Clinic.

General medicine physicians generally attempt to admit overflow patients to a medically related ward controlled by the Neurology Service prior to seeking a bed from another alternate service/department. If a bed on an alternate service/department must be obtained, the chief resident of the alternate service/department is contacted. One physician stated that due



to quality assurance concerns (such as quality and appropriateness of care), he always sought care for the patient in an alternate medical treatment facility; that he would never admit a patient to a bed on an alternate service/department. Another physician stated that admission of elective patients is often delayed due to this problem.

Although the General Medical Service is rarely approached for bed space (because it is so rarely available), senior medical residents state that they will lend bed space if it is available. This arrangement occurs between senior residents of the services/departments involved.

As previously stated, when medicine admits to beds on an alternate service/department, the admitting service retains responsibility for care of the patient. All but one physician stated that this patient would return to a medicine bed immediately upon availability.

The admitting physician or senior resident of the admitting service/department is responsible for informing the nursing staff of the admission. By agreement, the senior resident of the alternate service/department must inform the nursing staff of his/her concurrence with the admission. This notification takes place in person or by telephone. The admitting physician is responsible for informing the patient; this is accomplished in person or by telephone. Occasionally, this message is relayed through an admission clerk. One physician stated that he rarely told the patient that he was

being admitted to a unit where medicine did not control the bed space since he did not want to concern the patient with this issue.

There is general consensus among physicians interviewed from all services that bed control is a serious problem at WRAMC. Several comments from physicians as to why the problem exists include: there is no on-line computer system to assist with this function, there is no penalty for late discharge, there is no check-out time established for patients, all services are forced to accept air evacuation patients and beds are blocked for these patients as they have first priority following emergency admissions. There is a feeling among physicians from all services that far too much physician time is spent performing this bed control function. Although there is feeling that physicians should be involved in triage functions, it is felt that bed control should be an administrative rather than a clinician function.

#### Analysis of the Interward Transfer Mechanism

Interward transfers are a necessary part of medical care. After patients enter the health care system as inpatients, it is often discovered that incomplete diagnostic information necessitates movement from one treatment modality to another. Some patients initially require intensive medical/nursing intervention, but later can be cared for appropriately in a less

intensive milieu. The patient requiring redirection, on the other hand, is subjected to the transfer process due to initial nonavailability of space on the appropriate unit. Even though this transfer is appropriate for continuation of treatment, the transfer of this patient consumes medical, nursing and administrative resources unnecessarily. For this reason, the entire transfer mechanism will be described so that an appreciation can be gained as to the extent of this resource consumption.

When a physician decides that a patient must be transferred from one nursing unit to another, the initial step is to contact the receiving unit to see if bed space is available. The physician may perform this function or he may request that the senior resident make the inquiry. When transfers occur to the General Medicine Service, the physician must contact "the Bed Boy", to assure that bed space is available.

Once it is determined that space is available, a physician order is written in the chart directing that the transfer be initiated. In addition to a simple transfer order, in this institution, the physician must write orders for the total treatment protocol for the patient. This policy was initiated so that nursing care providers could obtain a clear picture of the needed care without having to sort through the complete medical record to determine which orders were currently in effect and which had been discontinued.

Once the physician order is written, the nursing staff from the sending unit must contact the nursing staff on the receiving unit with information about the patient's condition. This information is given in the form of a verbal report on what has occurred to the patient since admission and the current status of nursing intervention. Patient Administration, Pharmacy, and Nutrition Care must additionally be notified (by the sending unit) so that they may discontinue services for the patient on the sending unit and provide necessary services on the receiving unit.

The patient is then physically transported to the receiving unit. The transferring unit (Nursing Service personnel or Housekeeping personnel, depending on the time of day) must then terminally clean the vacated patient care area including the bed, the bedside table and other patient use areas.

Once the patient is received on the new unit, he must be oriented to his physical surroundings. The receiving unit must review the nursing care plan and make alterations as necessary. The physician's orders must be transcribed and necessary distribution to Pharmacy, Nutrition Care and Patient Administration must be made. A physical assessment must be made by the nursing staff and appropriate documentation must be entered into the clinical record.

One may readily see that this process consumes manpower resources from Medicine, Nursing, Nutrition Care, Pharmacy, Patient Administration, Housekeeping, and ultimately filters to

Human Resources, Medical Activities Administration, and Information Management. For the patient who must be transferred, this resource utilization is appropriate. For the patient who is transferred because of initial admission to an inappropriate unit, this resource consumption is an unnecessary drain on the limited resources available.

#### Quality Assurance Issues

Quality Assurance is a planned and systematic process by which the health care professions can monitor and evaluate patient care. This process includes a provision for resolving identified problems. A problem of redirection of patients at Walter Reed Army Medical Center has been identified by the author. As defined, this problem consists of the assignment of a patient to a ward or unit due to nonavailability of space on the unit where the appropriate medical service controls beds, or a significant delay in admission.

The traditional method for evaluating whether medical care meets professional and community standards is to examine the three commonly accepted classifications of data that describe the health care process. These classifications include: the structure of health services, the process of health services delivery, and the outcome of health services.<sup>1</sup>

When examining the structure of health services one should determine whether the nature of a health delivery system allows it to function efficiently and effectively. Does the

facility possess the proper number of physicians, nurses, medical technicians, etc.? Do these professionals and paraprofessionals possess the proper credentials to practice in the setting where they deliver care? Is the physical plant adequately equipped? Is there an organizational plan properly established and executed to include regulations, standard operating procedures, and directives? Are these regulations, standard operating procedures and directives adhered to by members of the staff?

Examining the process of health services delivery requires inspection of all therapeutic and diagnostic services provided to the patient. This may be accomplished through observation of care delivery while actually occurring or by a retrospective examination of documentation.

Outcome of medical services is the item of ultimate interest in health care delivery. It is also the item which is most difficult, costly, and time consuming to measure. To determine whether services delivered were effective involves extensive post contact validation. Has a change in current and future health status resulted from, or may it be attributed to, a medical system intervention?

Examination of health services delivery at Walter Reed Army Medical Center indicates that structural deficiencies may exist. These structural deficiencies center around certain physical deficiencies as well as the absence of certain policies, directives, and standard operating procedures in the Admitting Department. For example, there is no standard established for a

timely admission; there is no policy prohibiting admission of patients to wards where the appropriate medical service does not control beds. Although there is an extensive quality assurance program established and operating at this institution, the problem of redirection has not been formally identified and a tracking mechanism is not currently in place to evaluate this problem's consequences. Furthermore, programs that have been instituted at other medical treatment facilities (both military and civilian) to circumvent this problem have not been instituted here. For example, there is no uniform preadmission program, nor is there admission scheduling.

The situation of admission of patients to wards where the appropriate medical service does not control beds is somewhat unique to military medical treatment facilities. There is no mention of this situation in an extensive literature review. Other medical treatment facilities avoid this situation by either referring the patient to another facility, delaying admission, or by admitting the patient to a 'medical-surgical holding unit' which is located in or adjacent to the admitting department, or adjacent to the emergency room. These units are staffed by providers appropriately trained and credentialed to deliver care in this setting.<sup>2</sup>

Identification of the problem of redirecting patients at WRAMC was made by the author after discussion with physicians, nurses, and administrators. Physicians and nurses confirm a

concern for how this problem affects patient care. There is a feeling that it may result in delays in treatment intervention; that it may affect the quality and appropriateness of patient care, and that it unnecessarily consumes limited manpower and materiel resources. There is also a feeling from health care providers and administrators that the structure of health services delivery at WRAMC contributes to this problem by non provision of appropriate directives and standard operating procedures, and appropriate personnel and equipment to: prevent admission to an inappropriate ward, track ward/bed assignments, establish criteria for timely admission from the Admitting Department and the Emergency Medical Service, prevent queuing delays, and establish allocation of beds by utilization patterns.

Delay in admission as observed in this medical treatment facility is generally the result of one or more of three circumstances. The first circumstance involves a simple queuing element. Patients arrive at the Admitting Department more rapidly than admitting clerks can serve them. This circumstance is aggravated by arrival of a bulk of patients from the aeromedical evacuation system.

The second circumstance involves the patient assessment process in the Emergency Room. Impedance in this instance may result from delays in obtaining diagnostic test results from Pathology or Radiology, or delays in obtaining consultive medical services.



The third circumstance that retards the admission process is the nonavailability of a bed on the nursing unit to which the patient is to be admitted. This situation is resolved only after a patient on that unit is either discharged or transferred to an alternate unit. In some instances, a bed on an alternate unit may be sought and utilized temporarily by the patient being admitted. The third circumstance raises an additional question of quality of care delivered to the patient that must be discharged or transferred to make room for the patient being admitted.

"The admitting process in hospitals is widely regarded as a long, painstaking, and repetitive process."<sup>3</sup> In an attempt to avoid queuing delays many hospitals have developed a preadmission program.<sup>4,5,6,7</sup> One hospital has instituted a proactive utilization review program, "to determine whether a patient's condition warrants acute hospitalization".<sup>8</sup> A third approach uses the simple technique of a check in time schedule for elective scheduled admissions. Previous to institution of this system, the admitting supervisor stated that "there were periods when her department was either over loaded with work or almost marking time".<sup>9</sup>

Diagnostic delay is a recognized quality assurance problem. Brenner and Jessee describe this problem as one of omission rather than commission. The emergency department is described as "a source of many delays in diagnosis malpractice

claims".<sup>10</sup> The authors further state that such delays raise questions concerning appropriateness of care as well as a resultant increased risk to the patient and to the institution as a result of delay in initiating treatment intervention.

Hospital admitting department management has in recent years, become a recognized specialty in the hospital administration field.<sup>11</sup> Any medical treatment facility which fails to utilize the recognized principles and techniques which this field encompasses is certain to experience difficulty with admitting patients. The direct results of difficulty in admitting patients can lead to recognized quality assurance problems in areas such as appropriateness of care and delay in initiating treatment intervention. These techniques and principles "can be applied to any situation in which people must be processed in a medical environment".<sup>12</sup>

In a medical treatment facility which services the number and variety of patients as does Walter Reed Army Medical Center, the use of these principles becomes almost imperative. Current admitting management techniques in this institution, however, lack consideration of some of these principles and techniques and thus, as expected, admitting problems are evident.

#### Institutional Management Issues

Admission to a military medical treatment facility is both a simple and a complex act. The simplicity lies in the knowledge that many constraints that may need consideration for

admission into the civilian health care system have little or no bearing on the decision. For example, in the case of the active duty or retired military beneficiary, there is no loss of military pay or other benefits during the hospital stay. There need be no fear of a devastating financial obligation as a result, as there is but a nominal 'hospital charge'. Similarly, out of pocket costs to other beneficiaries (dependents of active duty, dependents of retired, and other designated beneficiaries) are minimal.

Students of health care administration rapidly gain a realization that the cost of health care, however, can not always be measured in dollars and cents. Health care economists enumerate many other cost factors that must be considered by both the patient and by the health care institution.<sup>13,14</sup> These include such factors as distance traveled, waiting times, psychological stress, family separation, and in the case of redirection, a delay in treatment initiation or initial treatment by a nursing staff that may not be totally familiar with the diagnosis. The redirected patient may further 'pay' by subjecting himself to a subsequent transfer to a second nursing unit that must reassess his condition and further plan and initiate his care regimen.

The complexity of admission to a military medical treatment facility lies then, in the understanding of the vastness of this primary, secondary and tertiary system of health care delivery that requires payment of these additional costs.

In a system where tertiary care may only be available thousands of miles away (as in the case of some patients received through the air evacuation system), these factors must gain the attention of health care providers and of their administrative support systems.

Admission to Walter Reed Army Medical Center requires only that the physician complete part A, of the Inpatient Accounting System (IAS) Admission Record, Department of the Army Form 4582-R.<sup>15</sup> The patient then presents himself with this form to the admitting clerk in the admissions office. The admitting clerk obtains the remainder of the necessary information (address, next of kin, emergency telephone numbers, etc.) and validates the patient's eligibility to receive medical care. Validation requires possession of a valid Armed Forces Identification Card (or other valid identification card) and assurance of enrollment in the Defense Enrollment Eligibility Reporting System (DEERS).

Following completion of the admission record and verification of eligibility, the admitting clerk must issue a register number, fabricate an Inpatient Medical Recording Card, stamp a Patient Control Card, a Terminal Digit File Folder, and other necessary forms (room/bed tag, identification bracelet). He must then verify that there is bed space available on the ward to which the patient is to be admitted.

WRAMC Regulation 40-400 requires that the physician be

located in the event that bed space on the indicated ward is unavailable. In this case, the regulation states that,

"The admitting physician will have to determine whether the patient is to be admitted to another ward or not admitted that day. While the Admissions Office will assist in locating beds within Departments and Services in accordance with their policies, it will not coordinate for borrowing beds from another Department or Service."<sup>16</sup>

Since the author's initial observation in the Admitting Department, the Automated Quality of Care Evaluation Support System (AQCESS), has been installed in the Admitting Department. This system eliminates the completion of the IAS Admission Record (HSC Form 348R). The necessary information (address, next of kin, etc.), is entered directly into this data base by the admitting clerk. This system has the capability to assign a particular patient to a particular bed, but this is not currently being accomplished due to lack of manpower resources.

#### Aeromedical Evacuation Admissions

Patients arriving at Walter Reed Army Medical Center through the Aeromedical Evacuation System are designated as inpatients or as outpatients. Those that are designated as inpatients must be admitted to this institution as inpatients. WRAMC Regulation 40-400 states that,

"With the exception of emergency admissions, admissions via air evac have first priority and beds will be blocked for them. Departments and services must find beds for air evac admissions even if it requires borrowing a bed(s) from another department or service. If a surgical service is full and air evac patients arrive after normal duty hours, on weekends, or holidays, the admissions office will admit that patient to any surgical bed available."<sup>17</sup>

The potential for redirection is therefore evidently recognized by the Walter Reed administrative and clinical staffs. It again becomes evident that the bed control function in these circumstances rests almost totally with the clinical staff; particularly with the physician admitting patients.

Data Collection on Number  
of Redirected Patients .

In an attempt to determine the extent of the redirection problem, one thousand, two hundred inpatient clinical records were examined. It was necessary to extract each record from the inpatient record stacks as the information sought was not coded in any data base. Approximately one hundred records from each month were examined. Since this institution admits approximately sixty patients per day, 1,800 hundred patients per month, the 100 records per month represent approximately 5.55 percent of the total. The records were selected from a list of dispositions within the time period examined. The list was prepared by a member of the Patient Administration Division Medical Audit Section. Approximately twenty percent of the records listed were unavailable for examination since they were either totally absent from the stacks or had been previously removed for some other reason. Data examined included: date of admission, admission diagnosis, and initial admission ward. Records examined were obtained from fiscal year 1985.

In order to determine whether a patient would need redirection, an attempt was made to establish whether the ward to

which the patient was admitted coincided with the service that would be expected to care for the patient with that particular listed diagnosis. Of the 1,200 hundred records examined, twenty six patients were thought to be admitted to wards that would not normally care for patients with the listed diagnosis. This figure represents 2.16 percent of the total sample. Of these patients, twenty one were patients that should have been admitted to beds controlled by Department of Surgery. Of this group, twenty were admitted to that department, but were admitted to wards inappropriate for the diagnosis based on surgical subspecialty. One of this number was admitted to a bed that is controlled by Neurology Service. One patient that should have been admitted to a medicine service bed was admitted to Ward 61, a minimal care unit, that by standard operating procedure, should not have received direct admissions. One patient that should have been admitted to a pediatric service bed, was admitted to a surgical subspecialty bed. The remaining patients were cross service admissions between Neurosurgery and Neurology. It is understood that placing these final three patients in the redirected category is suspect, however, it was felt that by diagnosis, the initial admission was highly suspect.

Of the admissions determined inappropriate, 80.7 percent were from a surgical service, 3.8 percent were from a medicine Service, 3.8 percent were from a pediatric service and 11.7 percent involved Neurology/Neurosurgery. There was no

discernible quarterly or seasonal pattern as five patients (19%) were affected in the first quarter, eight (31%) in the second quarter, nine (34%) in the third quarter and, four (15%) in the final quarter.

Redirection as a Result  
of Queuing

A limited time and motion observation was made in the Admitting Department to determine whether admissions were significantly delayed, and if so, for what reason(s). A total of 111 observations were made. These observations occurred between the hours of 0800 and 1500 on 24, 25, 27, 28, and 31 March, 1986. Additional observations were made during the same hours on 1 April; on 2 April, observations were made between 1500 and 2300 hours. Arrival and departure times were noted for each observation. It must be noted that during the period of observation, the Admissions Office was temporarily relocated during renovation of the main office. Certain physical arrangements may have affected observed serving times.

Of the 111 patients, twenty five waited greater than one hour to be admitted. This figure represents 22.52 percent of those observed. Of these twenty five patients, twenty one were forced to wait simply because they arrived so frequently that admitting clerks could not keep pace; therefore, a queue resulted. The four patients not involved in this simple queuing mechanism, were involved in a queuing delay of another nature. In each of these four cases, the patient's admission was



delayed because a bed on the Medical Service was not available at the time. These beds had to be cleared prior to the patients' admission. No attempt was made to determine the exact cause of the delay in these cases.

Factors determining serving time by the admitting clerks were observed. The admissions office is constantly bombarded with telephone calls. Each telephone call interrupts the admission processing of a patient. If a patient is acutely ill or in an altered mental status, processing time is extended. If a patient is unable to speak English, an interpreter must be obtained. Validation of eligibility through DEERS may detain admission due to computer malfunction and due to multiple clerks competing for use of the single computer terminal. Patients arrive at the Admitting Department with improperly prepared IAS Admission Cards. Errors by the admitting clerk(s) delay processing time. Attempts to verify bed availability lengthen processing due to busy numbers or detainment by ward personnel (unable to answer phone immediately, check to see if bed available, etc.).

The observation of admissions on 2 April included observation of admissions arriving from an aeromedical evacuation flight. Fifteen patients arrived from the Aeromedical Staging Facility (ASF) at Andrews Air Force Base. All fifteen arrived at the Admissions Office simultaneously. Of these fifteen patients, five, (33.33 percent) waited greater than one hour to be

admitted. Again, waiting was a result of the inability of the admitting clerks to process these admissions in a timely manner (queue).

Several admissions were observed during periods when the admitting clerk was not interrupted. In these instances, the admission process took as little as five minutes; as long as ten minutes.

#### Admission Delays from the Emergency Medical System

An additional source of delay of admission is prolonged Emergency Medicine System (EMS) visits. The WRAMC Quality Assurance Committee began tracking this data in August, 1984. A prolonged EMS visit is described by the WRAMC Quality Assurance Committee as one that exceeds four hours. During the period August 1984, through July 1985, 3,064 patients were admitted through the EMS. Delays in admission due to prolonged EMS visits numbered 288. Reasons for delays in the EMS are enumerated in all months except November and December. Incomplete reporting of this data makes it impossible to consistently separate those patients who were admitted from those who were treated and released. Where the data could be separated, reasons for admission delays were tabulated. A summary of the five most frequent reasons (from data available) are displayed, and are discussed.

Consultant related delay	-- 48
EMS related delay	-- 44
Radiology related delay	-- 31
Awaiting bed placement	-- 25
Laboratory related delay	-- 19

EMS related delays were additionally categorized as: busy ER, prolonged treatment in the ER, and prolonged ER evaluation.

Prolonged EMS visits are frequently unavoidable due to unavailability of consultants and extended radiological or laboratory processing times. Questions raised concerning prolonged ER treatment and evaluation, however, raise the aforementioned quality assurance issues of appropriateness of care and potential delay in initiation of treatment interventions. Although these issues are recognized to be purely clinical in nature, it is felt that administrative policy could be helpful in resolution. For example, what is the maximum time appropriate for a patient to be treated or evaluated in the emergency room prior to admission? This institution has no formally stated policy in this regard.

Of the 288 patients who had prolonged visits, twenty five of those, or 8.7 percent experienced delays in admission due to unavailability of beds on the unit to which they were to be admitted. Delays of this nature raise the quality assurance issue of delay in appropriate treatment intervention. Can an alteration in the structure of health delivery services resolve this issue? Previously cited actions by other medical treatment facilities in this regard seem to indicate an affirmative answer.

Delays in admission due to prolonged EMS visits accounted for 9.6 percent of patients admitted through the EMS during this period. Is this figure within reasonable or acceptable community or professional expectations? Is there a policy statement that this percentage should be reduced? Is a standard established for a maximum percentage of prolonged EMS visits?

The answer to whether a delay of 9.6 percent of admissions through the EMS is within community standards would require further study. The presence of a Policy Statement expecting reduction of this percentage or establishing a maximum percentage is not evident at this institution.

Analysis of Unused Beds,  
1 January through 31 March 1986

To determine whether certain services were fully utilizing allocated bed space, an analysis of unutilized beds during the period 1 January through 31 March 1986 was accomplished (Appendix A, Tab D). It is evident from this analysis that the Department of Surgery and the Department of Psychiatry had a significant number of unutilized beds during this period. Additional study of bed allocation and utilization would be needed to determine if this pattern is consistent.

### Endnotes

<sup>1</sup>Avedis Donabedian, Exploration in Quality Assessment and Monitoring, Vol I: The Definition of Quality and Approaches to its Assessment, (Ann Arbor, MI: Health Administration Press, 1980), Chapter III.

<sup>2</sup>Interview with the Director and Staff, Emergency Treatment Center of Greater Southeast Community Hospital, Washington, DC, 26-30 August 1985.

<sup>3</sup>Terry L. Rosenthal, "VIP Program Improves Admissions, Public Relations," Patient Accounts, May 1984, p. 3.

<sup>4</sup>Lou Ann Tyler, "Preadmission: A Valuable Tool for the Admitting Department," Patient Accounts, February 1984, p. 2.

<sup>5</sup>Terry L. Rosenthal, "VIP Program Improves Admissions, Public Relations," Patient Accounts, May 1984, p. 3.

<sup>6</sup>David E. Brown, May Sarmiento, and James D. Levy, "Admissions Program Frees Hospital's Beds," Hospitals, 1 July 1983, p. 50.

<sup>7</sup>Mary L. Moulton, "Very Important Patient Card Trims Time Spent in Admitting," Hospital Admitting Monthly, May 1983, p. 59.

<sup>8</sup>David E. Brown, May Sarmiento, and James D. Levy, "Patient Oriented QA Activities," QRB, January 1984, pp. 57-59.

<sup>9</sup>"A Check In Time Schedule for Reservation Patients Eases the Traffic Jam in Admitting--And Elsewhere," Cost Containment, 26 April 1983, p. 1.

<sup>10</sup>Lawrence H. Brenner, and William F. Jessee, "Delays in Diagnosis: A problem for Quality Assurance," QRB, November 1983, pp. 337-44.

<sup>11</sup>Kevin D. Blanchet, and Sr. Mary M. Switlik, The Handbook of Hospital Admitting Management, (Rockville, MD: Aspen Systems Corporation, 1985), p. xi.

<sup>12</sup>*Ibid.*, p. xii.

<sup>13</sup>Victor R. Fuchs, ed., Economic Aspects of Health, (Chicago: The University of Chicago Press, 1982).

<sup>14</sup>Paul J. Feldstein, Health Care Economics, 2nd ed., (New York: John Wiley and Sons, Inc., 1983).

<sup>15</sup>Inpatient Accounting System Admission Record, Department of the Army Form 4582-R, September 1983.

<sup>16</sup>Walter Reed Army Medical Center Regulation 40-400, January 1983, p. 4.

<sup>17</sup>Walter Reed Army Medical Center Regulation 40-400, January 1983, p. 3.

### III. CONCLUSIONS AND RECOMMENDATIONS

Potential problems with ward/bed assignments at Walter Reed Army Medical Center were identified by the Deputy Commander for Administration. This study was conducted in order to determine the nature of the problem, the extent of the problem, and whether a methodology to relieve the problem could be, or should be formulated.

In order to determine the nature and extent of the problem, the problem was defined and a methodology to systematically examine the problem was designed. The term redirection was utilized to define the problem. This definition includes the concepts of the placement of a patient on a nursing care unit which is inappropriate given the admission diagnosis and the delay in the admission of a patient. These concepts were felt to be directly related. Unavailability of bed space on the appropriate nursing care unit causes the patient to be admitted to an inappropriate unit and usually causes the admission process to be delayed. Even though delayed admissions result from other factors, both the concept of admission to an inappropriate unit and the concept of a delayed admission raised questions concerning the effectiveness and the efficiency of this institution's management of its admitting system.

Managerial issues thought to affect or to be affected by these concepts were identified. Each of these issues was explored to gain an understanding of its contribution. To

determine how physicians perceived the redirection problem and how cross service admissions were arranged, communications surrounding the admission of a patient in this situation were explored. To gain an understanding of the additional work load created by transferring this patient from an inappropriate to an appropriate nursing unit, the interward transfer mechanism was described.

The impact of a delay in the admission process and the admission of a patient to an inappropriate nursing care unit was considered. When the admission is delayed, treatment intervention is delayed. This may adversely affect patient outcome. Admission to an inappropriate nursing unit may also delay treatment intervention because the nursing staff on the inappropriate unit may lack the knowledge and skills necessary to initiate appropriate treatment interventions. This may also adversely affect patient outcome. In either instance, the quality of patient care must be questioned.

To determine whether systemic practices contributed to the problem, the admission process was described in detail. Regulations, standard operating procedures and policies were reviewed. Data were collected on the number of patients admitted to inappropriate nursing care units based on admission diagnosis and the number of patients experiencing a delay in admission from the Admitting Department and from the Emergency Medical Service.

Although the initial scope of this study was limited to the Department of Medicine, it was felt that a more accurate



account of the problem could be presented if additional departments or services were examined. The scope of the study was broadened to include a hospital wide examination of the redirection mechanism. A further examination of bed utilization patterns was conducted in an attempt to determine whether certain services were fully utilizing allocated bed space.

The researcher, then, attempted to determine the exact nature and extent of the problem by interviewing physicians, members of the nursing staff and by consulting with members of the administrative staff. Further efforts included; a limited time and motion study of the admission process in the Admitting Department, extraction of data related to admission delays from the Emergency Medical Service, and extraction of data from inpatient clinical records concerning ward/bed assignment based on admission diagnosis. Additionally, a service-by-service examination of unutilized beds was made.

### Conclusions

This study has led to the formation of the following conclusions. A review of 1,200 inpatient records revealed that 26 of 1200 patients (2.16 percent) were admitted to nursing care units that were inappropriate based on admission diagnosis. On first examination, this percentage may seem so small that one would not consider it a problem. If one considers, however, the total number of patients that this institution admits annually, the total number of patients affected (2.16% of 21,900 equals

473) represent a notable potential for adverse patient outcome.

A review of admission delays from the Admitting Department revealed that 22.52 percent experienced delays under routine conditions and as high as 33.33 percent experienced delays when arriving via the aeromedical evacuation system. This delay in the admission process may delay treatment intervention and may likewise adversely affect patient outcome. Approximately 5000 patients per year are delayed by this mechanism (22.52% of 21,900 equals 4,932 plus a higher percentage of air evac patients). A review of admissions through the Emergency Medical Service revealed that 288 of 3,064 patients (9.6 percent) experienced a prolonged visit.

Conditions which potentially delay treatment intervention at this institution could, then, affect as high as 6,000 patients annually. Whether delay in treatment intervention results from a delay from the Admitting Department, the Emergency Medical Service or from initial admission to an inappropriate nursing care unit, the potential for adverse patient outcome resulting from these delays is the issue. Adverse patient outcomes have the potential for consuming health care resources. Whether this consumption comes from litigation or from a prolonged treatment course, actions to prevent contributing factors may offer substantial savings.

Imagine the potential additional expense incurred if each of the above number of patients required just one additional

day of treatment. At a conservative cost estimate of \$600.00 per patient day, the savings could amount to \$3,600,000.00 annually (6000 patient days times \$600.00 per day)! One must conclude, then, that the conditions that contribute to the potential delay in treatment intervention at this institution are significant.

Could these conditions improve if proper Admitting Department management techniques were employed? It is obvious from the previously described observations and from the examination of unutilized beds, that Admitting Department management techniques could be employed to prevent admission delays and to more effectively utilize beds. It is also obvious that regulations and standard operating procedures could provide necessary administrative guidance to prevent cross service admissions and to provide expectations for timely admissions from both the Admitting Department and from the Emergency Medical Service.

Since the initial portion of this study began, the Automated Quality of Care Support System (AQCESS) has been installed at WRAMC. This system provides this institution with the capability to affect changes necessary to prevent some of the previously described problems. The mechanism now exists for on-line tracking of ward utilization patterns and for the assignment of a particular patient to a particular bed. The system even informs the admitting clerk when a patient is admitted to a nursing care unit that is inappropriate given the

admission diagnosis. Although portions of the system provide useful data to physicians and administrators, other portions of the system's capabilities are currently unused or ignored due to existing policy or due to lack of manpower resources to enter and maintain data.

### Recommendations

To relieve physicians from constant involvement with the bed control function, and to facilitate actual bed assignment, it is recommended that a bed control officer position be established and staffed twenty four hours per day, seven days per week. A bed control officer could employ previously mentioned Admitting Department management techniques to initiate a functional admission scheduling program and thus assure an efficient utilization of available bed space. He could further monitor for potential conditions in the Admitting Department which could lead to excessive delays in the admission process and plan effective scheduling of personnel assets to prevent resultant delays.

An admissions officer could further relieve those physicians that are currently employed full time as "Bed Boys", allowing them to return to the bedside and potentially facilitate the treatment process. The savings of one man-year of physician time could more than offset the expense of creating and manning this position.

To prevent cross service admissions and admitting delays from the Admitting Department, it is recommended that formal

regulations and standard operating procedures be written that would direct the bed control officer to take actions to prevent cross service admissions and direct admitting clerks to take actions to prevent admission delays from the Admitting Department. These actions may take the form of informing higher authority in the case of cross service admissions and may additionally take the form of procedures to initiate to obtain additional help for the admissions clerks in time of overload. The formulation and implementation of a facility wide admission scheduling program and a preadmission program should further be accomplished.

To prevent admission delays from the EMS and the possibility of quality assurance concerns surrounding this occurrence, it is recommended that formal criteria for a timely admission from this service be established and that an effort be made to reduce the percentage of patients affected. Since this condition has been previously identified by the Walter Reed Army Medical Center Quality Assurance Committee, and is currently being monitored, this mechanism could be utilized to report progress.

It is further recommended that AQCESS be utilized to manage the admission and ward/bed assignment process as it was designed to do. Failure to utilize this system to its full potential seems a true waste of this capacity.

These conclusions and recommendations are further

compiled and reiterated in an inclosed Decision Paper (Appendix A). This decision paper will be presented to the Deputy Commander for Administration, Walter Reed Army Medical Center.

APPENDIX A

A Decision Paper

Methods to Increase the Effectiveness/  
Efficiency of Patient Ward/Bed  
Assignment at WRAMC

# DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO

REFERENCE OR OFFICE SYMBOL

HSHL-CS

SUBJECT

Methods to Increase the Effectiveness/Efficiency of Patient Ward/Bed Assignment at WRAMC

TO C of S

FROM Administrative  
Resident

DATE

CMT 1

1. This is a decision paper.

2. Purpose. Admission of a patient to Walter Reed Army Medical Center is frequently significantly delayed (greater than one hour). Patients are occasionally admitted to wards that are inappropriate given their admission diagnosis. This paper will propose methods to increase the effectiveness/efficiency of patient ward/bed assignments at Walter Reed Army Medical Center.

3. Discussion. A limited time and motion study of the admission process revealed that 25 of 111 patients observed (22.5%) experienced a significant delay (greater than one hour) in the admitting department (Tab A). Examination of 1,200 inpatient medical records revealed that 26 patients (2.2%) were admitted to wards that would not normally care for them, given their admission diagnosis (Tab B). Confirmation that patients are occasionally initially admitted to wards where the appropriate medical service does not control beds was given by 12 senior residents during interviews, April 1986 (Tab C). A review of WRAMC regulations and publications revealed that there are no criteria established for a timely admission by the Patient Administration Directorate, nor are there formal criteria stated for a timely admission from the Emergency Medical Service. These observations raise the quality assurance issues of quality of initial care, appropriateness of care, delay in initiation of treatment intervention, and the structure of health services delivery. An analysis of unused beds revealed that there was a significant number of unutilized beds on the Psychiatric Service and on the Surgery Services during the 90-day period 1 Jan through 31 March 1986. This observation was evident even after consideration of a temporary bed cap which was in effect during this period (Tab D).

4. Conclusions. The listed observations were made under planned but casual conditions. Although not definitive, these observations are felt to be indicative of trends in areas observed. It is therefore concluded that:

a. There is a need at this institution for a bed control officer; one that would function 24 hours per day, 7 days a week.

b. A bed utilization tracking mechanism should be instituted so that a moment-to-moment status of bed availability may be obtained.

c. Regulations and Standard Operating Procedures should be written for the Admitting Department and the EMS indicating expectations for: (1) timely admission criteria from the admitting department, (2) timely admission criteria from the EMS, (3) prohibition of admission of a patient to a bed where the appropriate medical services does not control beds.

5. Recommendations.

a. Perform a more definitive study of bed utilization patterns and allocations by service and reallocate beds based on actual utilization patterns.

b. Establish the position of bed control officer to be staffed 24 hours a day, 7 days a week.



SUBJECT: Methods to Increase the Effectiveness/Efficiency of Patient  
Ward/Bed Assignment at WRAMC

c. Utilize the Automated Quality of Care Evaluation Support System (AQCESS) to make bed/ward assignments. This system is capable of assigning a patient to a particular bed on a ward.

d. Initiate regulations and Standard Operating Procedures establishing criteria for timely admissions from the admitting department and the EMS. Establish methods to temporarily increase staffing in these departments during times of overload.

e. Initiate Regulations and Standard Operating Procedures prohibiting admission of patients to wards where the appropriate medical services does not control beds.

f. Develop a functional system of admission scheduling to include a center-wide preadmission program.

FUNDING IMPACT:

Staffing for an admission control officer would require 5 personnel to provide minimum coverage, 24 hours a day. Funding of these personnel would depend on job description and performance criteria. Since the Patient Administration Directorate currently provides Admitting Department supervision, it is anticipated that these positions could be filled by GS-4 to GS-5 personnel.

5 Encl

1. Tab A--Summary of Time and motion study of the admission Process
2. Tab B--Ward Assignments Based on Admitting Diagnosis
3. Tab C--Report of Interviews with Senior Residents
4. Tab D--Summary of Unutilized Beds, 1 Jan to 31 Mar 86
5. Tab E--Summary of Admission delays from the Emergency Medical Service

GEORGE A. GWALTNEY  
MAJ, AN  
Administrative Resident

6. Coordination.

Deputy Commander for Clinical Services:	Concur _____
Chief, EMS Service:	Concur _____
Patient Administration Directorate:	Concur _____
Resource Management Directorate:	Concur _____

## TAB A

SUMMARY OF TIME AND MOTION STUDY  
OF THE ADMISSION PROCESS

Dates and hours of observation: 24 March 1986 -- 0800-1500  
 25 March 1986 -- 0800-1500  
 27 March 1986 -- 0800-1500  
 28 March 1986 -- 0800-1500  
 31 March 1986 -- 0800-1500  
 01 April 1986 -- 0800-1500  
 02 April 1986 -- 1500-2300

Total number of patients observed: 111

Number of patients with admission  
 delay greater than one hour: 25

Percentage of patients experiencing  
 admission delay: 22.5%

Reasons for delay: 21 patients -- queue  
 4 patients -- awaiting bed assignment (Medicine)

Number of servers (admitting clerks): varied from 3 to 6

Factors affecting serving time:

Temporary location of the Admission Office  
 DEERS Check (eligibility verification)  
 Patient acuity or mental status  
 Interruptions of the admitting clerk  
 Verification of ward bed space  
 Absent Admission Card  
 Improperly Prepared Admission Card  
 Queue  
 Errors by the Admitting Clerk  
 Language Barriers

Serving time without interruption: 5 to 10 minutes

Observation of Air Evac Admissions Considered Separately:

Number of air evac admissions observed -- 15  
 Number of air evac admissions delayed -- 5  
 Reason for delay of air evac admission -- queue  
 Percent experiencing admission delay -- 33.3%

## TAB B

## WARD ASSIGNMENT BASED ON ADMITTING DIAGNOSIS

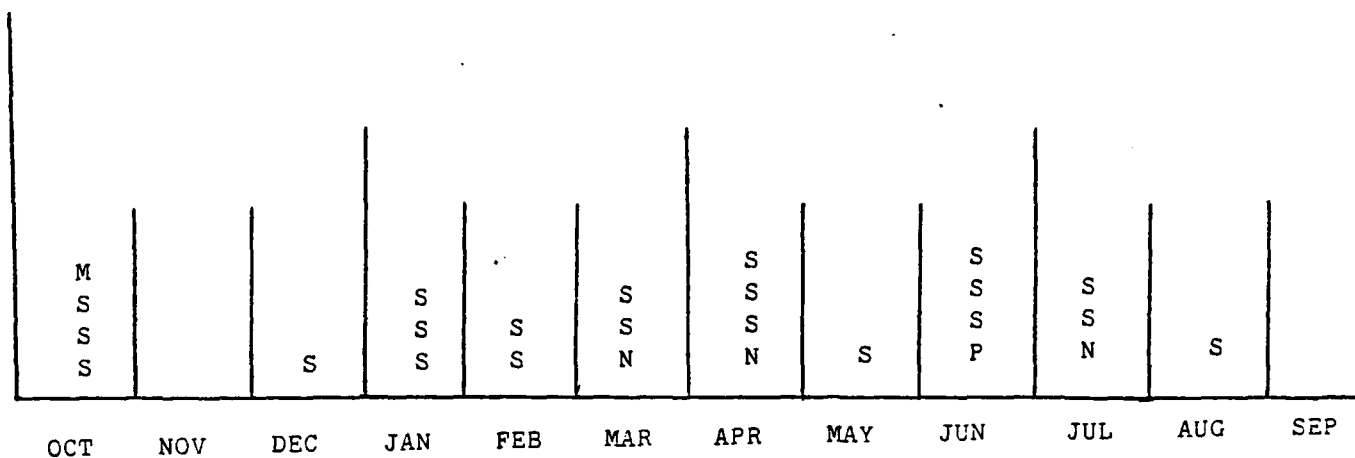
Number of records examined:	1,200
Number of patients felt to be admitted to inappropriate wards based on admitting diagnosis:	26
Department/Service involved:	
Surgery	21 patients
Medicine	1 patient
Neurology-Neurosurgery	3 patients
Pediatrics	1 patient

Twenty surgical patients were admitted to wards where a surgery service controls beds, but were inappropriate given surgical subspecialty. One surgical patient was admitted to the Neurology Service.

The Medicine patient was admitted to Ward 61 which was not supposed to receive direct admissions.

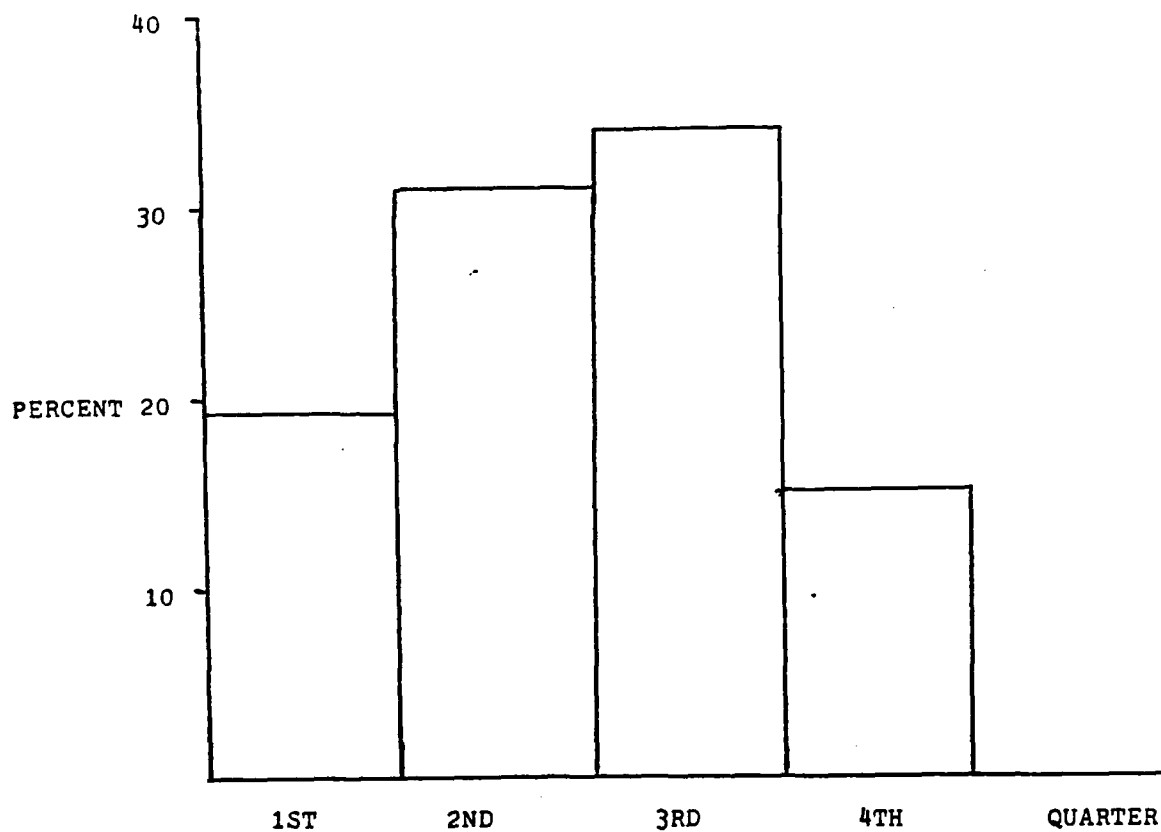
The Neurology-Neurosurgery admissions were cross admitted.

The Pediatric patient was admitted to Urology.

REDIRECTED  
PATIENTS

SCATTER DIAGRAM OF REDIRECTED PATIENTS

KEY-----M=1 MEDICINE PATIENT  
 S=1 SURGERY PATIENT  
 P=1 PEDIATRIC PATIENT  
 N=1 NEUROLOGY/NEUROSURGERY PATIENT



FISCAL YEAR 1985

REDIRECTED PATIENTS

## TAB C

## REPORT OF INTERVIEWS WITH SENIOR RESIDENTS

Fifteen senior residents were interviewed using a standard interview format (attached).

Senior residents interviewed -- Surgery: 4  
 Pediatrics: 3  
 Medicine: 5

Summary of responses by Surgery residents:

- Question 1: Try surgical subspecialties first  
 Occasionally try Medicine or Neurology  
 Call chief resident of other service  
 Will not admit to Medicine because of QA
- Question 2: Loan bed if space is available  
 Refer to chief resident  
 Never happened  
 Recommend admission to alternate hospital
- Question 3: The admitting service
- Question 4: Immediately upon availability of a bed  
 on the admitting service
- Question 5: The admitting service  
 The admitting service and the alternate service
- Question 6: In person or by telephone
- Question 7: The admitting physician  
 No point in telling the patient
- Question 8: In person or by telephone by the admitting service
- Question 9: 1 to 5%, Vascular Service 30% or more  
 5 to 10%, Vascular Service 20 to 50%  
 Less than 1%, Vascular Service 20 to 30%  
 5 to 10%, Vascular Service 20%

Summary of responses by Pediatric residents:

- Question 1: Under 5 years, seek bed in other hospital  
 Over 5 years, call senior resident of other service  
 Call resident of other service then call  
 nursing supervisor  
 Contact service specialty and ask for bed on that  
 service; transfer to adult ward to make room

- Question 2: Contact chief resident of pediatrics to obtain bed  
Loan bed if available
- Question 3: The admitting service  
Pediatrics if under 6 months
- Question 4: At some later indeterminate time
- Question 5: The chief resident of Pediatrics  
The Admitting physician
- Question 6: In person or by telephone
- Question 7: The chief resident of pediatrics  
The admitting physician
- Question 8: In person or by telephone
- Question 9: 15 to 20%  
10%  
30 to 40%

Summary of responses by Medical residents:

- Question 1: Call chief resident of Neurology  
Seek bed at alternate hospital  
Call chief resident of Urology  
Call surgical subspecialties  
Delay admission  
Never admitted to other service  
Pick convenient bed, call chief resident
- Question 2: Never happened  
Allow to borrow if bed available  
Call chief resident
- Question 3: The admitting service
- Question 4: Immediately upon availability of bed on the  
admitting service  
At some later indeterminate time
- Question 5: The admitting physician  
The chief resident of both services
- Question 6: In person or by telephone
- Question 7: Admissions  
Admitting physician
- Question 8: In person or by telephone  
Sometimes relayed through admissions

Question 9: 1%  
 2 to 3%  
 1% or less  
 10%  
 5%

Summary of comments from all senior residents:

Dissolve "Bed Boy," have administrator do it  
 Patient needs triage, physician needs to be involved in this  
 Establish discharge time and penalize patient if not gone by  
 this time  
 Install an on-line computer system to handle this function  
 Problem occurs often because this is a referral hospital  
 Air evac patients cause much of the problem  
 Pediatric service underbedded significantly  
 A frustrating problem on Pediatrics  
 Need nurse or administrator to handle bed control  
 Vascular Surgery Service needs more beds  
 Transfer of patients from one ward to another to accommodate  
 a sicker patient is a frustration to nurses and patients  
 The teaching mission of this hospital causes some of these  
 problems  
 The teaching mission is impacted upon by this problem  
 Not enough elective operating time, patients often postponed  
 for elective but necessary surgery  
 Possibility of early discharge due to need of bed for more  
 acute patient

STANDARD INTERVIEW FORMAT FOR DETERMINING COMMUNICATION  
PATTERNS DURING REDIRECTION

This interview format will provide a basis for interviewing physicians that are involved in the admission of patients to WRAMC.

1. If a patient must be admitted to your service and no beds are available, what procedure do you follow to obtain a bed on another service? \_\_\_\_\_

2. If you are the resident in charge, what response do you give when a physician from another service asks to admit a patient to a bed that your service controls? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. If a patient is admitted to a bed on an alternate service, what service is responsible for that patient's care?

- a. \_\_\_\_\_ The admitting service
- b. \_\_\_\_\_ The alternate service

4. If a patient is admitted to a bed on an alternate service, when would this patient normally return to a bed controlled by the admitting service.

- a. \_\_\_\_\_ Immediately upon availability of a bed on the  
admitting service
- b. \_\_\_\_\_ At some later indeterminate time.
- c. \_\_\_\_\_ Never

5. If a patient must be admitted to a bed on an alternate service, who is responsible for informing the nursing staff about the patient? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. When and how is notification actually accomplished? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. If a patient must be admitted to a bed on an alternate service, who is responsible for informing the patient? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. When and how is notification actually accomplished? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9. Estimate of percentage of patients involved in admission to alternate service. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## TAB D

SUMMARY OF UNUTILIZED BEDS, 1 JANUARY - 31 March 1986  
(90 Days)

## Facility-wide unutilized beds (Total operating beds--978)

1 to 31 Jan 86 -- 9,617 / by 31 = 310.22 average daily

1 to 28 Feb 86 -- 6,867 / by 28 = 245.25 average daily

1 to 31 Mar 86 -- 8,249 / by 31 = 266.09 average daily

---

24,773 / by 90 = 274.81 average daily

considering 76 bed cap-6,840 (76\*90) (Capped operating beds--902)

---

17,893 / by 90 = 198.81 average dailyPediatrics (Ward 51) (Total operating beds--48)

1 to 31 Jan 86 -- 461 / by 31 = 15.00 average daily

1 to 28 Feb 86 -- 473 / by 28 = 16.89 average daily

1 to 31 Mar 86 -- 482 / by 31 = 15.54 average daily

---

1,420 / by 90 = 15.77 average daily

considering 14 bed cap-1,260 (14\*90) (Capped operating beds--34)

---

160 / by 90 = 1.77 average dailySurgery (Wards 56,57,58,64,65,66,67,68) (Total operating beds--373)

1 to 31 Jan 86 -- 4,036 / by 31 = 130.19 average daily

1 to 28 Feb 86 -- 2,608 / by 28 = 93.14 average daily

1 to 31 Mar 86 -- 3,123 / by 31 = 100.74 average daily

---

9,767 / by 90 = 108.52 average daily

considering 40 bed cap-3,600 (40\*90) (capped operating beds--333)

---

6,167 / by 90 = 68.52 average dailyPsychiatry (Wards 53,54,55) (Total operating beds--131)

1 to 31 Jan 86 -- 1,425 / by 31 = 45.96 average daily

1 to 28 Feb 86 -- 983 / by 28 = 33.32 average daily

1 to 31 Mar 86 -- 1,204 / by 31 = 38.83 average daily

---

3,562 / by 90 = 39.57 average daily

Medicine (Wards 71,73,74,75) (Total operating beds--156)

1 to 31 Jan 86 -- 1,174 / by 31 = 37.87 average daily

1 to 28 Feb 86 -- 830 / by 28 = 29.64 average daily

1 to 31 Mar 86 -- 1,000 / by 31 = 32.25 average daily

---

3,004 / by 90 = 33.37 average daily

considering 18 bed cap-1,620 (18\*90) (Capped operating beds--148)

---

1,384 / by 90 = 15.37 average dailyNeurology (Ward 52) (Total operating beds--43)

1 to 31 Jan 86 -- 497 / by 31 = 16.03 average daily

1 to 28 Feb 86 -- 315 / by 28 = 11.25 average daily

1 to 31 Mar 86 -- 292 / by 31 = 9.41 average daily

---

744 / by 90 = 8.26 average daily

considering a 4 bed cap- 360 (4\*90) (Capped operating beds--39)

---

384 / by 90 = 4.26 average daily

## TAB E

SUMMARY OF ADMISSION DELAYS FROM THE  
EMERGENCY MEDICAL SERVICE

This is a compilation of data concerning admission from the EMS, August 1984 to July 1985. This data was compiled from minutes of the EMS Quality Assurance Subcommittee which defines delay as a visit greater than 4 hours in length.

Total admission during period:	3,064
No. of admissions from EMS that were delayed:	288
Percentage of EMS admissions that were delayed:	9.6%

Five most frequent reasons for delay:	No. of Patients*
Consultation delay	48
EMS related delay**	44
Radiology related delay	31
Awaited bed	25
Laboratory related delay	19

\* Reporting of data inconsistent. In some cases, unable to differentiate between patients admitted and patients treated and released. The numbers above represent the data that could be extracted on patients who were admitted after the EMS visit.

\*\*Further explanation of EMS related delay:

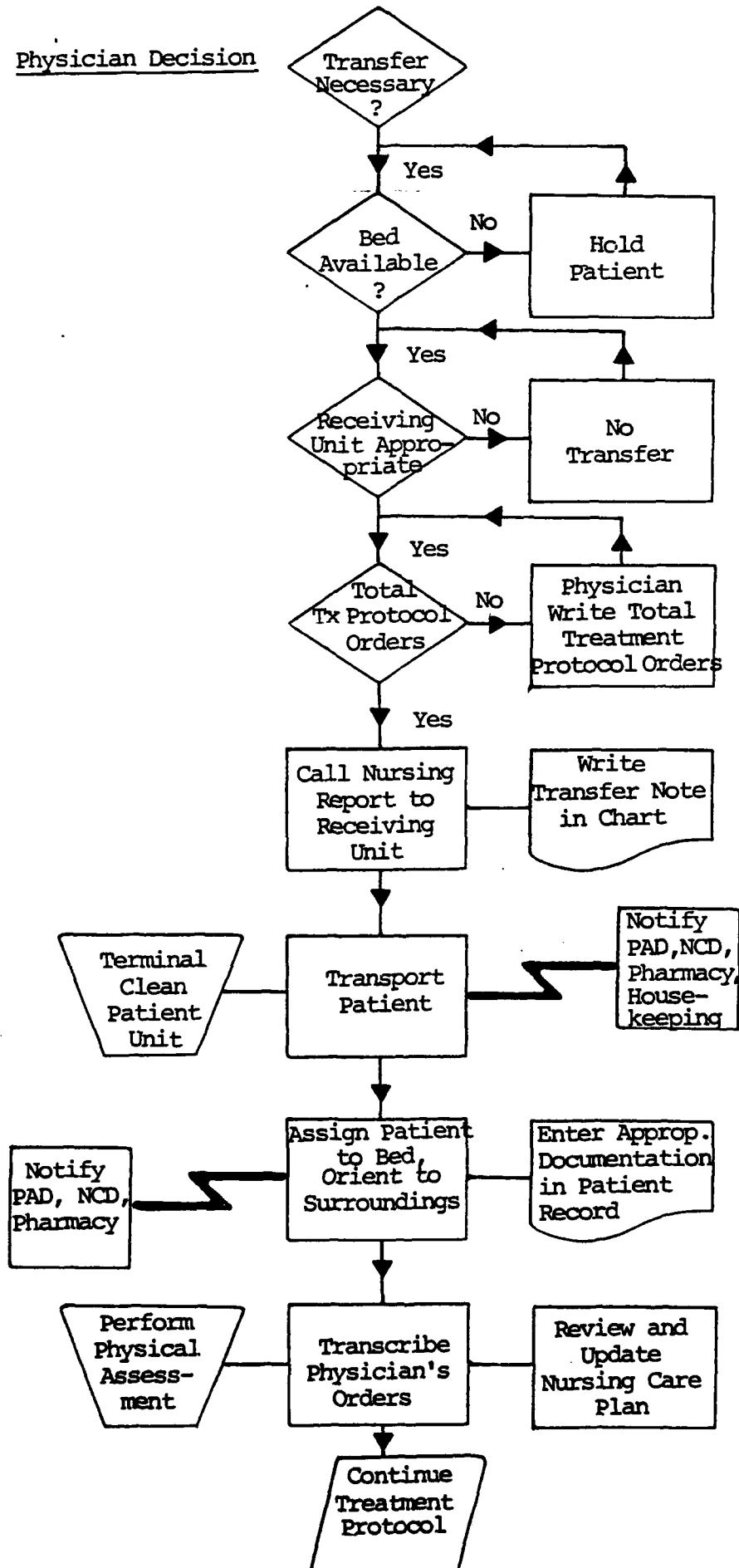
- Busy ER
- Prolonged treatment in the EMS
- Prolonged ER evaluation

Note: Even though there is no EMS Regulation or Standard Operating Procedure concerning criteria for length of EMS visit, the Deputy Commander for Clinical Services published an EMS Admission Policy on a Disposition Form, 24 Jan 85. This policy states that physicians are responsible for ensuring that patients do not remain in the EMS longer than 4 hours.

## APPENDIX B

### A Detailed Algorithm Describing Current Transfer Mechanism with Decision Alternatives Identified

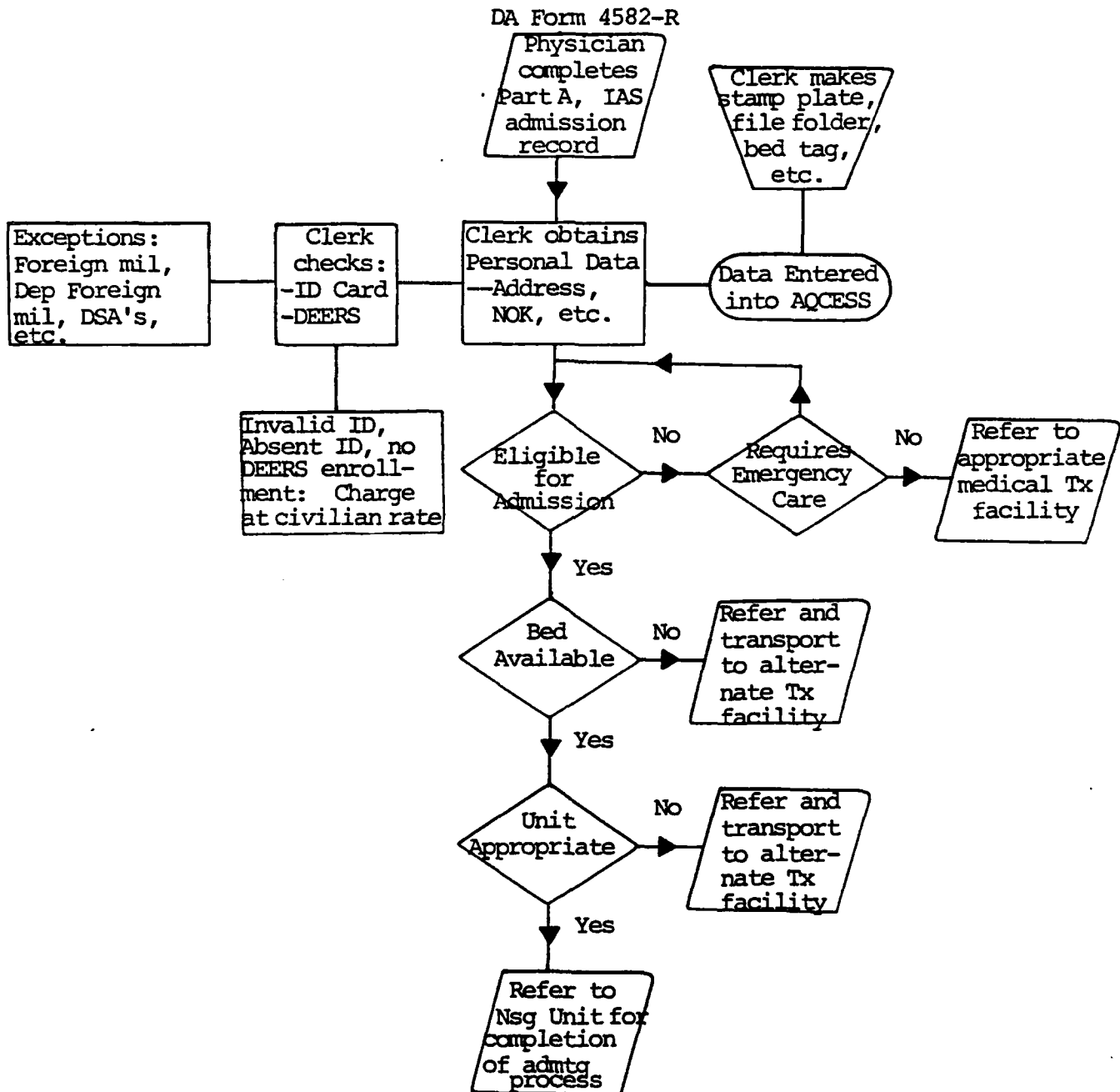
## TRANSFER MECHANISM ALGORITHM

Physician Decision

## APPENDIX C

Detailed Algorithm of Admission Process  
at WRAMC With Specific Proposals  
to Prevent Redirection

# ADMISSION PROCESS ALGORITHM



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